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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,504	11/21/2003	Terry R. Galloway	3178-12	3010

7590 10/06/2005

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EXAMINER

LEWIS, BEN

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,504

Applicant(s)

GALLOWAY, TERRY R.

Examiner

Ben Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 17-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/5/04.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. Applicants election without traverse of Group I, claims 1-16, in Paper filed July 29th 2005 is acknowledged. Claims 17-31 are withdrawn from consideration.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galloway (U.S. Patent No. 6,187,465 B1) in view of Webster, Jr. et al. (U.S. Patent No. 6,086,722)

With respect to claims 1,3 and 7, Galloway discloses a process and system for converting carbonaceous feedstocks into energy without greenhouse gas emissions wherein the process and system of the invention converts carbonaceous feedstock from fossil fuels and other combustible materials into energy without the production of unwanted greenhouse emissions. The present process comprises the following steps:

- (a) converting a carbonaceous feedstock and a greenhouse gas stream in a gasification unit to synthesis gas comprising carbon monoxide and hydrogen;

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(b) electrochemically oxidizing at least a portion of the synthesis gas from the gasification unit in a first half-cell of a fuel cell to produce a first half-cell exit gas comprising carbon dioxide and water;

(c) recovering the carbon dioxide from the first half-cell exit gas to serve as at least a portion of the greenhouse gas stream in step (a); and

(d) electrochemically reducing an oxygen-containing gas in a second half-cell of the fuel cell completing the circuit and resulting in the production of electrical energy (Col 2 lines 5-25).

Galloway does not specifically mention that the gasification unit is a non catalytic high temperature , gas phase reactor operating at conditions to achieve a gas exit temperature from at least 700⁰C to about 1600⁰C. However, Webster, Jr. et al disclose a process for minimizing evaporator scaling during recovery of liquids and solids from the aqueous effluent discharged during a partial oxidation gasification wherein the partial oxidation reaction is preferably carried out in a free-flow, unpacked non-catalytic gas generator, or gasifier at a temperature within the range of about 700⁰C to about 2000⁰C, preferably about 1200⁰C to about 1500⁰C (Col 3 lines 9-22). Therefore it would have been obvious to one of ordinary skill in the art to incorporate the non-catalytic gasifier of Webster, Jr. et al into the fuel cell system of Galloway because Webster, Jr. et al teach that under these conditions, about 98% to 99.9% of the hydrocarbonaceous feedstock can be converted to a synthesis gas containing carbon monoxide and hydrogen, also referred to as synthesis gas or syngas. Carbon dioxide and water are

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also formed in small amounts. The hydrocarbonaceous feedstock can be petroleum coke, coal, waste plastic material, sewage, or a suitable combination (Col 3 lines 9-22).

With respect to claim 2, Galloway teach that the present process comprises the following step:

(a) converting a carbonaceous feedstock and a greenhouse gas stream in a gasification unit to synthesis gas comprising carbon monoxide and hydrogen (Col 2 lines 5-25).

With respect to claims 4 and 5, Galloway teach that the process can be used in an electric power producing plant using fossil fuels such as carbonaceous feedstocks including coal, hydrocarbon oil, natural gas, oil shale, and petroleum coke as well as in petroleum refinery and a petrochemical plants (Col 3 lines 35-44).

With respect to claims 8, 10 and 11, Galloway teach that by means of the present process and system, the carbon dioxide in the fuel cell is easily kept separate from the air side and any nitrogen. This carbon dioxide can be recycled back to the gasifier in nearly pure form. Likewise water in pure form can be recycled as well in different amounts under gasifier control system requirements to maintain the ideal hydrogen to carbon monoxide ratio of in the range of about 1.75 to about 2.25. This helps maintain a high hydrogen content in the gasifier so that the gasifier-produced syngas can be used downstream in a chemical reactor such as a Fischer-Tropsch reaction system for

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the production of a variety of useful chemicals ranging from methanol to paraffin waxes (Col 3 lines 9-28).

With respect to claim 9, Galloway teach that the oxidized syngas, consisting essentially of hydrogen and carbon monoxide, leaves anode **42** of fuel cell **26** mostly as water vapor and carbon dioxide. This stream of oxidized syngas passes via line **48** into air-cooled condenser **50**, where the water vapor is condensed into liquid water and is removed from the condenser bottoms via line **52** for reuse (Col 4 lines 56-67).

With respect to claim 12, Galloway teach that the process of claim 8 wherein the amount of greenhouse gas stream is adjusted in step (a) so that the combined carbonaceous feedstock and greenhouse gas stream to said gasification unit has a hydrogen to carbon monoxide ratio in the range of about 1.75 to about 2.25 (See Galloway Claim 12).

With respect to claim 13, Galloway teach that the process of claim 1 wherein the oxygen-containing gas in step (d) is air and the nitrogen that remains after the electrical reduction is exited into the atmosphere (See Galloway Claim 13).

With respect to claim 14, Galloway teach that the process of claim 1 wherein said first half-cell of said fuel cell contains an electrolyte surrounding a porous catalytic anode electrode (See Galloway Claim 14).

With respect to claim 15, Galloway teach that the process of claim 14 wherein said second half-cell of said fuel cell contains an air electrolyte surrounding a catalytic cathode electrode (See Galloway Claim 15).

With respect to claim 16, Galloway teach that the process of claim 15 wherein said first and second half-cells of said fuel cell are separated by an ionically conducting membrane that will not allow passage of components from the respective half-cells (See Galloway Claim 16)

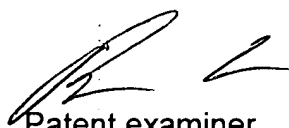
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Ben Lewis



Patent examiner
Art Unit 1745



DAH-WEIYUAN
PRIMARY EXAMINER